AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Canceled)

2. (Canceled)

3. (Previously Presented) A mobile communication system comprising a plurality of mobile stations and a base station, said base station comprising a plurality of antennas, a frequency shift portion, a combining portion, a receiving portion and a signal processing portion, wherein:

each antenna receives radio waves transmitted by the mobile stations;

the frequency shift portion shifts the received signals with a frequency corresponding to each of the antennas;

the combining portion combines the signal, which is shifted in frequency, as a combining signal;

the receiving portion converts the combining signal in frequency to make an intermediate frequency signal, and converts the intermediate frequency signal into a digital signal; and

the signal processing portion comprises:

spreading demodulation means which demodulates the digital signal with spreading by the use of a spreading code that is compensated frequency shift component corresponding to each of the antennas and which makes a demodulation signal at every antenna;

judging means which specifies an arrival direction of each of the radio waves of the mobile stations on the basis of the demodulation signal and which produces the demodulation signal for each of the mobile stations; and

fading compensation means which performs a RAKE combination from the demodulation signal for each of the mobile stations; wherein:

the frequency shift portion comprises a plurality of amplifiers corresponding to the antennas, a plurality of mixers, and a plurality of oscillators;

each amplifier amplifies a signal received at every antenna;

each oscillator oscillates a frequency predetermined on the basis of a value corresponding to each of the antennas; and

each mixer frequency-shifts the amplified signal with the oscillating signal.

4. (Previously Presented) A mobile communication system comprising a plurality of mobile stations and a base station, said base station comprising a plurality of antennas, a frequency shift portion, a combining portion, a receiving portion and a signal processing portion, wherein:

each antenna receives radio waves transmitted by the mobile stations;

the frequency shift portion shifts the received signals with a frequency corresponding to each of the antennas;

the combining portion combines the signal, which is shifted in frequency, as a combining signal;

the receiving portion converts the combining signal in frequency to make an intermediate frequency signal, and converts the intermediate frequency signal into a digital signal; and

the signal processing portion comprises:

spreading demodulation means which demodulates the digital signal with spreading by the use of a spreading code that is compensated frequency shift component corresponding to each of the antennas and which makes a demodulation signal at every antenna;

judging means which specifies an arrival direction of each of the radio waves of the mobile stations on the basis of the demodulation signal and which produces the demodulation signal for each of the mobile stations; and

fading compensation means which performs a RAKE combination from the demodulation signal for each of the mobile stations, wherein:

the frequency shift portion comprises a plurality of amplifiers corresponding to the antennas, a plurality of mixers, a plurality of frequency multipliers, and a single reference oscillator;

each amplifier amplifies a signal received at every antenna;

the reference oscillator oscillates a single predetermined frequency;

each frequency multiplier multiplies a reference oscillating signal with a predetermined value based upon a value corresponding to each of the antennas; and

each mixer frequency-shifts the amplified signal with a multiplied signal.

5. (Previously Presented) A mobile communication system comprising a plurality of mobile stations and a base station, said base station comprising a plurality of antennas, a frequency shift portion, a combining portion, a receiving portion and a signal processing portion, wherein:

each antenna receives radio waves transmitted by the mobile stations;

the frequency shift portion shifts the received signals with a frequency corresponding to each of the antennas;

the combining portion combines the signal, which is shifted in frequency, as a combining signal;

the receiving portion converts the combining signal in frequency to make an intermediate frequency signal, and converts the intermediate frequency signal into a digital signal; and

the signal processing portion comprises:

spreading demodulation means which demodulates the digital signal with spreading by the use of a spreading code that is compensated frequency shift component corresponding to each of the antennas and which makes a demodulation signal at every antenna;

judging means which specifies an arrival direction of each of the radio waves of the mobile stations on the basis of the demodulation signal and which produces the demodulation signal for each of the mobile stations; and

fading compensation means which performs a RAKE combination from the demodulation signal for each of the mobile stations, wherein:

a phase difference is retained between the received signal and the demodulation signal.

6. (Canceled)

7. (Canceled)

8. (Previously Presented) A mobile communication system comprising a plurality of mobile stations and a base station, said base station comprising an adaptive array antenna having a plurality of antennas, a frequency shift portion, a combining portion, a single receiving portion, and a signal processing portion, wherein:

the adaptive array antenna receives radio waves transmitted by the mobile stations;

the frequency shift portion shifts the received signal with a frequency predetermined on the basis of a value corresponding to each of the antennas;

the combining portion determines the signal, which is shifted in frequency, as a single combining signal;

the single receiving portion converts the single combining signal in frequency to make an intermediate frequency signal ,and converts the intermediate frequency signal into a digital signal; and

the signal processing portion comprises:

spreading demodulation means which demodulates the digital signal with spreading by the use of a spreading code that is compensated frequency shift component predetermined on the basis of a value corresponding to each of the antennas and which makes a demodulation signal at every antenna;

judging means which specifies an arrival direction of each of the radio waves of the mobile stations on the basis of the demodulation signal and which produces the demodulation signal for each of the mobile stations; and

fading compensation means which performs a RAKE combination from the demodulation signal for each of the mobile stations, wherein:

the frequency shift portion comprises a plurality of amplifiers corresponding to the antennas, a plurality of mixers, and a plurality of oscillators;

each oscillator oscillates a frequency predetermined on the basis of a value corresponding to each of the antennas; and

each mixer frequency-shifts the amplified signal with the oscillating signal.

9. (Previously Presented) A mobile communication system comprising a plurality of mobile stations and a base station, said base station comprising an adaptive array antenna having

a plurality of antennas, a frequency shift portion, a combining portion, a single receiving portion, and a signal processing portion, wherein:

the adaptive array antenna receives radio waves transmitted by the mobile stations;

the frequency shift portion shifts the received signal with a frequency predetermined on the basis of a value corresponding to each of the antennas;

the combining portion determines the signal, which is shifted in frequency, as a single combining signal;

the single receiving portion converts the single combining signal in frequency to make an intermediate frequency signal ,and converts the intermediate frequency signal into a digital signal; and

the signal processing portion comprises:

spreading demodulation means which demodulates the digital signal with spreading by the use of a spreading code that is compensated frequency shift component predetermined on the basis of a value corresponding to each of the antennas and which makes a demodulation signal at every antenna;

judging means which specifies an arrival direction of each of the radio waves of the mobile stations on the basis of the demodulation signal and which produces the demodulation signal for each of the mobile stations; and

fading compensation means which performs a RAKE combination from the demodulation signal for each of the mobile stations, wherein:

the frequency shift portion comprises a plurality of amplifiers corresponding to the antennas, a plurality of mixers, a plurality of frequency multipliers, and a single reference oscillator;

each amplifier amplifies a signal received at every antenna;

the reference oscillator oscillates a single predetermined frequency;

each frequency multiplier multiplies a reference oscillating signal with a predetermined value based upon a value corresponding to each of the antennas; and

each mixer frequency-shifts the amplified signal with a multiplied signal.

10. (Previously Presented) A mobile communication system comprising a plurality of mobile stations and a base station, said base station comprising an adaptive array antenna having a plurality of antennas, a frequency shift portion, a combining portion, a single receiving portion, and a signal processing portion, wherein:

the adaptive array antenna receives radio waves transmitted by the mobile stations;

the frequency shift portion shifts the received signal with a frequency predetermined on the basis of a value corresponding to each of the antennas;

the combining portion determines the signal, which is shifted in frequency, as a single combining signal;

the single receiving portion converts the single combining signal in frequency to make an intermediate frequency signal ,and converts the intermediate frequency signal into a digital signal; and

the signal processing portion comprises:

spreading demodulation means which demodulates the digital signal with spreading by the use of a spreading code that is compensated frequency shift component predetermined on the basis of a value corresponding to each of the antennas and which makes a demodulation signal at every antenna;

judging means which specifies an arrival direction of each of the radio waves of the mobile stations on the basis of the demodulation signal and which produces the demodulation signal for each of the mobile stations; and

fading compensation means which performs a RAKE combination from the demodulation signal for each of the mobile stations, wherein:

a phase difference is retained between the received signal and the demodulation signal.

11. (New) A wireless receiving device for a mobile communication system comprising a plurality of antennas, a frequency shifter, a combiner, and a receiver, wherein:

each antenna receives a signal utilized for a communication in the mobile communication system;

the frequency shifter shifts the received signal in frequency corresponding to each of the antennas;

the combiner combines the signal sifted in frequency as a combining signal; and

the receiver converts the combined signal to make an intermediate frequency signal.

12. (New) A wireless receiving device for a mobile communication system comprising a plurality of antennas, a frequency shifter, a combiner, and a signal processor, wherein:

each antenna receives a signal utilized for a communication in the mobile communication system;

the frequency shifter shifts the received signal in frequency corresponding to each of the antennas;

the combiner combines the signal sifted in frequency as a combining signal; and

the signal processor demodulates the signal shifted in frequency using a spreading code that is compensated for the frequency shift component corresponding to each of the antennas and which makes a demodulation signal corresponding to each of the antennas.

13. (New) A wireless receiving device for a mobile communication system comprising a plurality of antennas, a frequency shifter, a combiner, a receiver and a signal processor, wherein:

each antenna receives a signal utilized for a communication in the mobile communication system;

the frequency shifter shifts the received signal in frequency corresponding to each of the antennas;

the combiner combines the signal sifted in frequency as a combining signal; and

the signal processor demodulates the intermediate signal using a spreading code that is compensated for the frequency shift component corresponding to each of the antennas and which makes a demodulation signal corresponding to each of the antennas.